AMERICAN JOURNAL OF PHARMACY

AND THE SCIENCES SUPPORTING PUBLIC HEALTH

Since 1825

Vol. 109. MARCH, 1937 No. 3

CONTENTS

Annual Subscription, $3.00 Foreign Postage, 25 Cents Extra

Single Numbers, 30 Cents. Back Numbers, 50 Cents

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa., Under the Act of March 3, 1879

Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917. Authorized February 15, 1920

EDITORIAL

On these pages the editor offers his opinions, unshackled by advertising patrons and unrestrained by anything save a sense of the decent and the truthful—the editor, alone, is responsible for their type, their tone and their tenor.

"DIGESTED—BUT HARD TO SWALLOW"

EVER since *Readers' Digest* achieved to its merited success in the tabloid magazine field we have been deluged with publications patterned on the same principle, but mostly very poor patterns.

A few are worthy,—for example, *Science Digest* and *The American Mercury Digest,* but most of the others are merely the compilations of hack workers, slick with their scissors and paste. They print what they can find for nothing, usually badly decomposing the original. Their fillers are painful attempts to liven the pages with puerile puns. What poetry they print is surreal and sour, and their illustrations are chiefly from discarded half tones and cuts.

Digestion suggests assimilation, but with most of these parasitic slap-stick digests, their reading incurs both mental dyspepsia and nausea.

We have recently seen the tabloid popular mouthpiece of an organization purporting to promote the purity of all things in general, but particularly materials of American manufacture—from needles to noodles. For reckless crusading, old Richard the Lion-Hearted was a piker compared to these people, whose assaults on the citadels of infidel American manufacturers, and whose championship of the cause of the abused consumer deserve the financial support of every one foolish enough to give it!

Then there is a tabloid magazine called *Coronet,* not a digest, but a really beautiful little institution that does its best to entertain, with colorful copies of Oriental prints, and candid camera cuts of cabbages and kings.

Its prose, as the title *Coronet* aptly suggests, is frequently over one's head, but this month its leading article actually pronounces that it is also over their editors' heads.

"Is Milk, Cancer's Ally?" is the title of this leading, or shall we say, misleading article.

Of all the insinuating, incriminating and inaccurate articles this is the worst that has ever blemished the pages of any such publication. The author, whose name, we cannot, nor need not recall, has obviously no fundamental knowledge of the subject concerning which he writes, and the editors seemingly have less than that, if such is possible.

But beyond everything, the article cruelly assails the food, earliest introduced to the animal organism,—especially designed by nature for the basal feeding of the young and the weak. Imagine the consternation in the minds and hearts of recent mothers, who read this misinforming article.

"Milk", subjunctivizes its writer, hard put for pseudo-scientific sensation, "milk is cancer's ally"!

Then every baby born, and every bleating calf have cancer!

* * * * *

But such prostitutions of facts and perversities of judgment are not monopolized by tabloid journals. Even the newspapers, despite their improvement in recent years, occasionally go *loco*.

For the comic entertainment of those who really know the facts in the case, witness the following rantings of a Philadelphia newspaper editor (*The Philadelphia Record*), who ruins what might have been a worthwhile message, with a mess of misinforming matter:

"'Chlorine cocktail' is a mild term for a glass of our water. Bear in mind that before being treated with chlorine this liquid we call water is POISON—a deadly mixture which, official inquiry shows, contains:

'Pickling acids, phenolic and tar wastes, wool scourings, wash water from laundries, bleacheries and dye plants, slaughterhouse offal, paper mill waste, oil scum, a heavy proportion of coal culm (about 50 per cent. in the Schuylkill)—plus plain, old-fashioned sewage.'

The poisons in that horrible mess are chemically deadened, the bacteria swarms killed, by the chlorine treatment.

But you drink the chlorine, you taste the chemical mixture—and your nose knows the rest of the story."

Imagine 50 per cent. of coal culm in Schuylkill water. Strange that the river is else than static paste.

Then consider chlorine. Before its introduction to Philadelphia filtering plants, the typhoid death rate (1907) was about 60 per 100,000. Now it is less than 1 per 100,000. A "chlorine cocktail", with a part per million of the gas, is something scarcely to be feared, even in editorials.

And actually, Aqua Philadelphica rarely exceeds 5 grains per gallon of all solids. The Pharmacopœia (*ad interim* revision) allows 29 grains per gallon in its now official "Aqua". Simple arithmetic shows that Philadelphia water is six times cleaner than the Pharmacopœial high water mark.

But with one hundred and fifty million dollars to be spent for new water sources no wonder a partisan editor enthuses beyond the facts.

"There is gold in them thar hills!"

In another column of the same paper bubbling Heywood Broun berates James Bryant Conant, the chemist president of Harvard, for daring to meddle with National issues. States Broun, "I have a strong feeling that he should stick to his sodium and his chlorides and leave alone those subjects concerning which he is unable to make a strictly scientific approach."

By the same token the editor of the *Record* would do well to stick to his partisan political palaver and leave alone those scientific subjects concerning which he is unable to make even an empiric approach.

Far better than the quoted mis-statements and exaggerations would have been a stating of the real facts as interpreted by a trained writer and the endorsement of a policy to curb undue pollution of the two rivers supplying the aqueous needs of Philadelphia's residents.

* * * * *

It is perfectly clear that interpreters of matters scientific should first of all be scientific, which simply means, truthful and trained, and that last of all, or not at all, should they be sensational.

IVOR GRIFFITH.

Stabilization of Solutions Containing Sodium Salicylate and Sodium Bicarbonate. A. Capelleti, *Rev. Quim. Farmac. 1,* 121 (1935), through *Pharmaz. Zentrh. 78,* 57 (1937). The author recommends the addition 0.5 per cent. of sodium citrate. This addition is sufficient to prevent the development of color in a solution of these substances containing 5 per cent. of each for 14 days. L. F. T.

ORIGINAL ARTICLES

FADS AND FRAUDS IN FOODS AND DRUGS

By Charles H. LaWall, Ph. M., Sc. D.
Dean of Pharmacy, Philadelphia College of Pharmacy and Science

No one is better qualified than Dr. LaWall to expose these fads and frauds in foods and drugs. He pioneered with Dr. Harvey Wiley in this special field and to this day he has been a practical and authoritative champion of purity in foods and in drugs.

NINETEEN hundred and six was the year the now outmoded model of the Federal Food and Drugs Act was passed. This is more than a generation ago as biologists count human time, but it was centuries ago as measured in terms of human progress. This Act, which brought consternation to the ranks of drug adulterators and food fakers, was originally known as the Hepburn Bill. Let us orient ourselves in this nearly forgotten period.

In 1906 we had just emerged from the Victorian age and entered the "Victrolian" era. In that year the Panama Canal Commission reported in favor of a lock canal to be built at a total cost of $147,000,000. That it cost more than twice that sum is not a matter for criticism, for the French had spent more than $300,000,000 without building any canal at all. Some early species of the genus automobilus were on the streets scaring horses, but the building of paved highways, the use of traffic lights, and the legalizing of one-way streets, had not appeared, and pedestrians were still safe. "Movies" were still in their infancy, and "talkies" had not been conceived. Nineteen hundred and six was the year that Peary almost but not quite reached the North Pole. The pseudo-explorer Cook pretended to have reached it in 1908, and Peary actually placed the U. S. flag on the spot in 1909.

In 1906 President Roosevelt (Theodorus I) favored simplified spelling, which is the form still employed by high school students and some college boys. Dreyfuss was vindicated by France in that same year and given the Cross of the Legion of Honor. In 1906 there were wars and rumors of wars in Europe, Asia, Africa and South Amer-

ica; also news items of strikes, mutinies, attempted assassinations, revolutionary plots, typhoons and earthquakes. Among the latter was the San Francisco earthquake, which in retrospect, is now known as "the great fire", among earthquake-conscious Californians.

The year 1906, according to some people, was a tough one for the world, but we could call it an age of innocence. Just think of the changes that have occurred since then. Between 1906 and 1935 lies an interval which we call time, thirty years of it, and of that thirty years, five were spent in a gigantic combat between the principal nations of the world, the effects of which still exist, and which may last for many years more.

Thirty years ago the first vitamin had been discovered, but the word itself, "vitamin", had not yet been coined. Now we are in an era which is vitamin-conscious, and the letters which are now used for them resemble an offshoot of the New Deal alphabet.

"Halitosis" and "static" were terms that had not yet crept into common speech. "B. V. D." and "B. O." are abbreviations which were then unknown, and now used in jokes. Nobody had ever heard of tomato juice or a sauerkraut juice cocktail. Wireless communication had just entered into its first practical stage, and the signal "S. O. S." was still a theoretical possibility. Radio was not yet discovered thirty years ago. In fact, if any person in 1906 had been so rash as to attempt to describe it in terms of present day equipment and achievements, he would have been thought to be a bit "balmy", to put it in its mildest terms.

In foods in 1906 we still had "seasons" for lettuce, green peas, string beans, lima beans, radishes and tomatoes (expensive hot-house and comparatively flavorless varieties were sold in other times of the year) and strawberries were so scarce and high in price in winter that a well-known Philadelphia politician was called "Strawberry Jim" because in an unguarded moment he admitted that he could afford to eat them. The honey-dew melon and its similar relatives had not even been heard of.

Advertising was in its infancy, and our landscapes still carried patent medicine "ads", as the predominant feature, with "sarsaparillas" leading, and the cigarette had not yet come into its own. And in this benighted age our present Food and Drugs Act was passed. The opposition to it was tremendous. It had taken years of pioneer work by that great public martyr, Harvey W. Wiley, whom we then loved

for the enemies he had made. That these same enemies later became his friends is a matter of record. A Federal Food and Drug law had failed of passage in the 57th Congress (1903) and in the 58th Congress, (1905). It was opposed at first by such noted senators as Aldrich, Foraker, Hemenway, Lodge, and Penrose.

The Food and Drugs Act of 1906, finally passed the Senate with only four dissenting votes, all Southern Democrats. Before it was finally passed we had the following arguments against it:

1. That it was unconstitutional.
2. That it was inspired by the so-called "Medical Trust".
3. That it was unnecessary.
4. That it would prevent medication by making illegal the sale of many valuable proprietary remedies (nostrums).

One of the House opponents said: "It violates every principle of our Government by providing sumptuary legislation for our table menu."

It is of interest to note that the most important influences in molding public opinion in 1905 were *Colliers Weekly,* the *Saturday Evening Post,* and the *Ladies Home Journal,* the latter two being published by Edward Bok.

An exposure of nostrums by Samuel Hopkins Adams, under the title of "The Great American Fraud", and of packing house practices by Upton Sinclair in "The Jungle", contributed their share to the wave of popular demand for such legislation.

We have referred briefly to the Victorian age and the Victrolian era, and we are now emerging into the "Radiotic" age. The time prior to the enactment of the Federal Food and Drugs Act of 1906 may be designated by a legal term, *caveat emptor* "Let the buyer beware". The current time, from 1906 to 1935 may be called by another legal term, *caveat venditor,* "Let the seller beware".

We are now coming to a time when the condition may be termed in a modern extra-legal way as *caveat loquitur,* "Let the teller beware".

Times and conditions have changed, but human nature has not. We have reached a critical point in human progress so far as protecting the public from harm and from fraud and deception are concerned. The present laws are inadequate, in spite of claims and

statements to the contrary. The Food and Drugs Act of 1906 compels the truthful label, so far as it goes, but there is no control of statements made apart from the label, and the control of label claims has been rendered ineffective and almost valueless in some respects by the broadening of the advertising horizon. The copywriters and radio broadcasters state "We do not want censorship". We agree with their contention to this extent. We do not want censorship at all. We simply ask that the law be widened in its scope so that misstatements or lying may be punished, and that a statement which would be illegal if made on the label, will still be illegal, no matter where or how it is made, whether in a newspaper or magazine advertisement, on a billboard or in the spoken word of the radio broadcaster.

And we want the new law to apply not only to foods and drugs, but also to cosmetics, and to apparatus and devices for which false claims are made. We want these changes and improvements in our laws in the interest of the consuming public, for the protection of both its health and its pocketbook.

In June, 1933, there was introduced into the United States Senate by Senator Copeland, a bill designated as "S. 1944", which soon became known as "The Tugwell Bill", as it had been framed under the direction and sponsored by Assistant Secretary of Agriculture, Rexford Guy Tugwell. This bill did not amend the present Food and Drugs Act, but rewrote it from a somewhat different viewpoint of the proper method of protecting the consumer's health and his rights as a purchaser of foods, drugs and cosmetics. In this bill considerably more latitude and power were given to the administrative officers than had ever before been granted by legislation.

There was immediate and widespread opposition to some features of the bill, although for the most part its aims and purposes were warmly commended.

In December, 1933, public hearings by a Senate committee were held on S. 1944, and the revised bill was later introduced by Senator Copeland, as "S. 2000". Again hearings were held, and early in February, 1934, Senator Copeland again introduced a second revised bill as "S. 2800". In this form the objections to the original clauses to which objections were made were mainly eliminated. In this same session of Congress there were introduced other and different bills into the Senate by individuals and organizations,

among the most prominent being "S. 2858", introduced by Senator Carran and "S. 2355" by Senator Stephens. In the House during the same session of Congress were introduced bills known as "H. R. 6376" by Representative Black; "H. R. 7426" by Representative Sirovich; "H. R. 7964" by Representative Jenkes; and "H. R. 8316" by Representative Boland, two of these differing materially from any of the Senate bills. Thus, instead of only one bill as in 1906, the legislative assemblies, the manufacturers, and the consumers, were confronted with half a dozen bills. There is little wonder, therefore, that no legislation was accomplished. In the 74th Congress of 1935, Senator Copeland again introduced a rewritten bill, which was known as "S. 5". This bill had the support of many associations, for it contained the principal features which should be made part of any modern and progressive legislation.

The opponents of this bill made every one of the specific objections to its passage that were made by the opponents of the original Hepburn Bill in 1906. The adjectives are even more emphatic if possible. The terms "iniquitous", "hazardous", "disastrous", "the greatest crime in history", are a few of the designations of opponents. There are those who say, "We need no new legislation if the present law is efficiently enforced". This is not a misstatement; it is a lie, as I shall prove to you. There are two ways of evading the present law very easily and very simply. One of these ways is for a manufacturer to give a common article a fancy or coined name, putting as few facts on the label as possible and then by means of circulars, newspaper and magazine advertising, billboard advertising or radio broadcasts, making statements of claims for composition and value, or of therapeutic effect in the class of drugs, which are absolutely false, and which, if made upon the label, would render the seller or manufacturer liable to prosecution. A jam or preserve product could be called "biskit-spred", and the manufacturer would not have to comply with the regulations or standards for pure jams or preserve products. The product would come into direct competition with the genuine jams or preserves and could be sold at a lower price. In the case of a drug product, a "tea" for obesity, it could be sold under a coined name, like "Egyptian Tea", and include the dose without mentioning its composition, properties or uses on the label. The circular extolling its uses and properties, and stating that "it is not a drug, but a combination of ten different herbs", is

given out by the salesman or demonstrator, or the statements can be made in newspaper or magazine advertising. Such a product is now on the market, and its principal ingredient is senna, which is a drug. The other nine ingredients are drugs having no laxative value. Such a product is sold at a price which amounts to many times the cost of senna leaves, and is a cheat to the public.

In the same way a product which competes with butter but does not conform to butter standards, may be sold as "———— Golden Spread" a non-committal proprietary name and the producer and seller of the product escapes punishment.

Some "process cheeses" on the market really should be sold as "skim milk cheese" but under trade names they are advertised and sold as superior products.

The question is asked, "Why do we need a law controlling the composition and advertising of cosmetics?" It is true that most cosmetics are truthfully labeled and honestly sold, but there are upon the market, freckle-removing creams containing poisonous compounds of mercury, hair dyes containing the toxic compounds of lead and the allergic compound para-phenylene-diamine, which has an injurious effect upon many users.

We should have legal tolerances for arsenic and lead which are used by fruit and vegetable growers as insecticides, and of which traces are sometimes left on apples, pears, cabbage, celery, lettuce, cauliflower, and broccoli. Why do we need definitions and standards for certain foods? If the word "fancy" is used to describe a product, should it not mean something specific? If a loaf of bread is called "whole wheat bread", or "milk bread", should not the title mean something definite? If a product is sold as a diabetic food should it not conform to some standard of minimum carbohydrate content? Informative labeling is the consumer's right.

Why do we need permits for emergency control by the administration? Certain vegetable canneries in states which have no enforceable laws should be either abolished or made to submit to the sanitary rules which most canneries observe. The same is especially true of crab meat packers for their product is not sterilized.

Why do we need a strengthening of the laws controlling the sale of nostrums? Because, as the law now reads, the manufacturer must have knowledge of the falsity or fraudulence of any claims for therapeutic value, and as he is usually a layman he can plead ignorance,

and claim that he believed in the testimonials he has received recommending the product, but it must be remembered that testimonials usually come from those who have diagnosed their own ailments. In this connection the charge of the judge in one of these cases is pertinent. It is part of the text to the jury, involving a nostrum for which therapeutic claims were made by the manufacturer:

"Now in that connection you should examine this language in the light of the purpose of the law, which is to protect mankind against the consequences of human weakness, of human credulity or the disposition to believe, or of human gullibility. You should examine it in the light of the disposition of the ordinary humankind to wish to believe in the potency of remedial agents to relieve them from ills from which they are actually or conceivably suffering."

We want all of these improvements in our legislation affecting foods, drugs and cosmetics, in the interest of the consumer, for the protection of health, and in the interest of economy. The passage of such modern legislation will work no injury to any great proportion of manufacturers in these various fields, as many would have you believe. The large proportion of manufacturers are honest, and in their hearts welcome such legislation as protecting them from unscrupulous competitors, but unfortunately most of them are affiliated with trade organizations whose policies and actions seem to be controlled by a vociferous minority. The assumption of the administration always has been that most manufacturers are doing a legitimate business and wish to remain within the law. Unfortunately, all manufacturers cannot be trusted.

Are you aware of the fact that any person, however ignorant or untrained can manufacture and sell a medicinal preparation, a dental specialty or an antiseptic, as a nostrum or secret preparation without let or hindrance, while the licensed practitioners of medicine, dentistry and pharmacy have to spend years of preparation for their education?

The Federal Food and Drug Administration, during 1934, prepared a number of exhibits which were shown to the legislators in Washington, and a number were sent to food and drug bureaus in different parts of the United States. These were referred to by the opponents of the new law as "the chamber of horrors", and allegations were made that all such violations as were shown were amenable to the present law. This was a wicked and malicious lie.

A nationally known columnist stated several years ago when bill S. 1944 was discussed:

"The Pure Food and Drugs Act which has been proposed would be certain to interfere seriously with the sale of patent medicines. It has the audacity to suggest that advertisers should not be allowed to make false claims. It is inexpedient to offer rose water with the assertion that it is a very Verdun against the invasion of all germs. It is the inalienable right of every American citizen to take whatever blame fool nostrum he pleases into his system. Only a paternal and bureaucratic government would attempt to deny the free-born the inalienable right to pay for the privilege of assimilating impurities.

"In a recent magazine it was declared that the administration was intending to turn us all into guinea pigs for experimental purposes. The writer overlooked the fact that 100,000,000 of us are already guinea pigs living in the pens of the quacks and fakers".

The Canadian Government Commission named the following practices which are inimical to the interests of consumers:

"False and misleading advertising and marking; misleading statements as to quality of products, including designation of grades of goods likely to confuse or deceive rather than inform the consumer; uncertainty of specifications and formulae of manufactured products; adulteration; substitution of cheaper or inferior goods; harmful or poisonous ingredients; exorbitant prices for essentially simple and inexpensive products when sold under a brand or trade-mark; short weight and unjust scales; and deceptive packages and containers."

They also said: "In a new world of industry and trade *caveat emptor* takes on a new and pertinent meaning; the buyer may still beware, but he no longer knows of what he must beware". In the new age they say "The consumer must take on faith the quality and efficacy of his purchases."

Ask yourself the following questions:

Do I read labels intelligently?

Do I read advertisements with understanding?

Do I fall for the "sucker" advertisements?

Do I think that the consumer is entitled to protection as to his pocketbook as well as with regard to his health?

Am I a consumer or a producer?

Am I a unit of consumer demand or consumer acceptance?

Do I resist high pressure salesmanship and advertising ballyhoo?

If you want modern legislation with regard to foods, drugs and cosmetics, and especially legislation against untrue statements in advertising, you should make your views known to the associations or clubs to which you belong and endorse the next Food and Drugs Act which contains the progressive clauses named. This is a consumers' age; get on the band wagon.

Scientific Advances in 1936 in Disinfectants and Antiseptics. Emil Klarman, *Soap 13,* 104 (1937). This review with 63 references offers criticism on works which appeared most significant to the author. The subjects covered are: Methodological studies, phenol derivatives, coal tar products, chlorine and chlorine compounds, mercury compounds, antiseptic dyes, perborate, quinoline derivatives, oligodynamic action, soaps and detergents, biological substances, thiocyanates, potassium cyanide, ointments and related products, cadmium proteinate, radiant energy and irradiated materials. The advancements during the past year were not necessarily original. L. G.

Scabicidal Drugs: an Experimental Study. H. J. Templeton and H. V. Allington, *California and West. Med. 45,* 487 (1936). The causative agent of scabies was removed from untreated patients, placed in various solutions and these organisms were observed microscopically until all movements ceased. The substances used and the survival time were as follows: Tap water, 8 days +; white vaseline, 50 hours; 8 per cent. precipitated sulfur in vaseline, 40 hours; 10 per cent. colloidal sulfur in vaseline, 15 hours; 5 per cent. aq. solution of colloidal sulfur, 5 hours; Scabicide, 65 minutes; Mitigal, 50 minutes; 8 per cent. Peru balsam in vaseline, 30 minutes; Styrax, 30 minutes; 1 per cent. Creolin in vaseline, 80 minutes; 2 per cent. Betanaphthol in vaseline, 65 minutes; pyrethrum ointment, 21 hours. This technique is suggested as a practical procedure to determine the scabicidal power of drugs *in vitro* and its use is advocated in the search for effective remedies. L. G.

THE AIMS OF THE PUBLIC HEALTH SERVICE*

By Thomas Parran, M. D., Phar. D.

Surgeon General Public Health Service U. S. A.

Dr. Parran writes with authority. His program for public health has received the endorsement of every thoughtful citizen. And his program is not just a paper; it is actively under way in practice.

T is a signal honor for any member of my profession to be honored by this venerable and vigorous institution of learning. I accept this degree with profound gratitude and appreciation, recognizing that it is less of a personal tribute than it is a recognition of the growing importance of the specialty which I represent.

Like the Philadelphia College of Pharmacy whose 116th anniversary we are celebrating today, the Public Health Service had its birth here in Philadelphia. It was in 1798 when John Adams was President, that Congress passed "An Act for the Relief of Sick and Disabled Seamen". Under its provisions a deduction of twenty cents per month was made from the wages of each seaman on the merchant ships of the United States. The funds were deposited with the Collector of Customs in a Marine Hospital Fund and used to build and operate a series of hospitals in the principal ports.

This was the beginning of a Federal medical service, and, incidentally, the first health insurance system. In the latter connection it is interesting to note that after operating for nearly a hundred years as a contributory scheme, financed by employee contributions through a payroll check-off, it was replaced by a tonnage tax on the ships, viz., employer payments, and later supported by general taxation, viz., state medicine. The terms "health insurance" and "state medicine" had not yet been coined. In fact they now connote new and radical departures in medical practice, yet since 1798 we have had one or the other form of socialized medicine for this one group of wage earners. From this disconnected system of Marine Hospitals, a national Marine Hospital Service grew. The doctors in these hospitals frequently were the first

*An address delivered at the Philadelphia College of Pharmacy and Science, Philadelphia, Penna., Founder's Day, February 23, 1937.

to diagnose and treat exotic diseases. Because of this they were consulted by local health authorities when yellow fever or cholera threatened. The earlier system of state-operated quarantine stations lacked uniformity, and by 1893, it became obvious that this should be a federal function.

Because public health itself is a new concept, it was not until 1908 that the name "Public Health" was added to this hundred year old service. Since then progress has been rapid in developing an organization which in fact as well as in name is a federal Public Health Service.

On an occasion such as this, one is tempted to review and appraise the significant events in the long and distinguished history of the organization which I have the honor to direct. One could properly dwell with pride over the pioneer studies of Henry R. Carter in yellow fever which paved the way for Walter Reed's discovery of mosquito transmission; or the epochal work of Joseph Goldberger in establishing the nutritional nature of pellagra; or the unique contribution of Edward Francis in tularemia (he is the only American who has discovered a disease, found the cause, method of transmission, insect vector and animal host); or the recent alum-picric acid spray of Charles Armstrong, which prevents poliomyelitis in monkeys and offers so much hope in man; or the courageousness of Spencer and his co-workers in their successful search for a vaccine to prevent Rocky Mountain Spotted Fever. They and others in the Public Health Service have contributed much to scientific knowledge of disease prevention.

Progress is being made in the control of the venereal diseases. By one laborious step after another, we are extending our knowledge of mental illness, and of cancer. Since 1880, we have been working out the most satisfactory basis for cooperation with states in providing better health services for the people. As a result, prompt effect has been given to the health provisions of the Social Security Act under which $8,000,000 is being granted to the states for public health work. The mobilization of forces to combat the threat of epidemics in the wake of recent floods gives another illustration of the success of modern public health effort.

Appropriate as it might be to dwell upon any one of these events in the history of the Public Health Service, the title of my paper and my own inclinations impel me to consider what is ahead; to discuss the

aims in view and the methods by which these aims may become actualities.

I shall pause only to review briefly the scientific, social and economic bases upon which our health activities rest, for as stated in the preface of the Centennial volume of this College, "The history of yesterday foreshadows the experience of today and tomorrow".

During the past century, the spirit of inquiry in medicine has replaced dogma and tradition. The studies of Pasteur, Lister and the host of other scientists, have transformed medicine no less than has the power of steam transformed industry. A generation ago, a doctor with his saddlebags, could encompass most of the then available medical knowledge. Not so now, when it is a life's work to master just one specialty.

This growth of scientific knowledge has multiplied the number of things which can be done to prevent and cure disease. It also has increased the cost of medical service, putting such service beyond the reach of an increasing number of people. Moreover, our transfer from an agrarian to an industrial system with workers dependent upon a daily wage sufficient only to meet current necessary living costs, has resulted in the inability of many citizens to buy medical care when the wages stop.

Changing social concepts also supply an additional basis for public health work. The growth in the sentiment against suffering has been more rapid during the past century than ever before in the world's history. The abolition of slave trade, the growth of popular education and the development of measures of public assistance are examples.

Modern society everywhere accepts as an obligation the provision of the necessities of life for those who cannot provide such necessities for themselves. Since medical service is a necessity of life, it is only a small step to acceptance of the principle that such service must be made available by the community for those in need.

There are cogent economic reasons also for health services. A sick individual may become a burden upon society. Good health is an important factor in human efficiency. The treatment of disease is no longer a concern solely of the individual who is sick. The community as a whole has a financial stake in untreated illness. This point has become clear in recent years as we have accepted as a nation responsibility for providing pensions to the dependent groups of the population.

There are sound scientific, social and economic reasons for more aggressive attention to the public health. I think we have reached a stage in our civilization when we must accept as a major premise that citizens should have an equal opportunity for health as an inherent right coequal with the right to liberty and the pursuit of happiness. To realize this ideal is a broad aim of the Public Health Service. The methods we use fall into two major divisions, first, the better application of scientific knowledge for the prevention and cure of disease, and second, the acquisition of new knowledge.

Within the past two years, a good start has been made in the development of a national health program. In the Social Security Act for the first time, the Federal government declared a continuing policy of assisting states and localities in providing better health service. It has been relatively easy to inaugurate this work because since 1880, the Public Health Service has been authorized to cooperate with states in the prevention and control of disease. It has been possible to work out health programs in every state so that the states retain a full measure of responsibility for their own health programs subject only to meeting minimum standards which have been agreed upon jointly by the state health officers and the Public Health Service. The $13,200,000 being granted by the Public Health Service and the Children's Bureau is producing significant results in better health for the people. This appropriation, however, represents only about 10 per cent. of the total cost of public health work. The recent national conference on venereal disease control called attention to the need of greater federal interest in the control of these and other diseases. At this conference, it was earnestly recommended to the Administration that authorization for $25,000,000 be given in appropriate amendments to the Social Security Act, to be administered by the Public Health Service. It was also the opinion of this conference that the percentage of Federal money invested in the prevention of disease should not be less than the percentage invested in the care of dependents.

We must narrow the gap between what we know and what we do in public health. There are major causes of disease and death in regard to which present community action is totally inadequate.

The control of syphilis is a notable example. With the recent great increase in public interest in this subject, it should be possible to make this a rare disease within our generation. Medical and public

health officials are agreed as to the methods. The recent conference drew a series of blueprints which every state and every community can follow.

Cancer stands second among the causes of death. The cause of cancer is not yet known, but many cases of cancer can be cured by many known methods. Experts in this field estimate that 25 per cent. of cancer deaths could be prevented if all of our knowledge of cancer control was used. Two states have accepted some measure of responsibility for the treatment and cure of cancer through providing public facilities for those in need of care.

Pneumonia ranks high among the causes of death, but recent scientific advances point the way to preventing many such deaths. For several of the most frequent types of pneumonia, an improved concentrated serum has been developed which is quite effective. Moreover, a rapid method of typing the disease makes it possible for those cases to be located promptly which are amenable to serum therapy.

The control of tuberculosis is a job half done. This disease has been reduced by two-thirds in the present century. We have now reached a point where we can look forward to the practical eradication of tuberculosis.

The medical care now being furnished to the dependent groups of the population is poorly organized and inadequate. There must be general acceptance of the principle that the medical care of such dependents is a public responsibility.

Facilities for diagnosis and treatment of diseases frequently are lacking particularly in the rural areas. We need a great extension of laboratory service, the provision of hospitals particularly in rural areas, better organized dispensary services, and a better integration of private and public effort in the prevention and treatment of disease. As a nation, we should seek not only to make medical care more available to those in need of such care, but constantly to seek the improvement in the quality of medical service.

The Public Health Service itself will play a relatively small part in the health advancement of the future. It should be in a position, however, to promote, assist, and advise in the working out of state and local health programs. I am less interested in the size of the organization I represent than in the brains it represents. For many years, we have given an opportunity for a career service. We need to attract the

best of the medical graduates, to given them every opportunity for professional advancement, to train specialists in all phases of our work. I dream of a day when the Public Health Service will have a corps of men and women whose ability is not surpassed or equalled by any other medical or health organization in the world.

I have referred briefly to some of the research work of the Public Health Service. Plans are being drawn for a new National Institute of Health to be located in the environs of Washington, the headquarters for all of the research work of the Public Health Service. This should be more than a research institution. It should be also the headquarters for the training of our personnel. It should be the West Point of the Public Health Army.

The major unsolved problems of health and disease should be a concern of this institute. Scientific workers from other institutions will be free to bring their problems here and pursue their studies within its walls. Other scientists should go out from this institute to other institutions of the country. Such a constant interchange should promote progress. Many research problems of today are so complex that it is impossible for an individual worker and frequently it is impossible for any one organization to deal adequately with it.

The Federal government is in a position to lend its influence in bringing together various scientists concerned with a common problem and promoting joint and coordinated attack. Already we can point to progress in this field of cooperative research. For eight years, five of the leading syphilologists of the country have worked with the Public Health Service in pooling their knowledge, their material and their resources for study of syphilis. Valuable additions to our knowledge have come as a result of these cooperative clinical studies.

The problem of drug addiction has been the subject of joint interest by the Public Health Service and the National Research Council. One of the aims is to develop a synthetic drug which will have all of the virtues of morphine without its habit-forming qualities. A chemist at the University of Virginia has synthetized a number of compounds. These are being tested on animals at the University of Michigan and those which passed animal tests are being tried on patients in Massachusetts. Similar cooperative studies are under way in cancer. This principle can be applied to many problems. It is my hope that our Institute of Health will extend this principle widely. In addition,

promising studies should be supported by grants in aid along the lines which have proven profitable in recent years.

Summary

The aims of the Public Health Service are easily summarized. We seek to narrow the gap between what we know and what we do, and to extend the boundaries of knowledge of health and disease. We ourselves will play a small part compared with the total job to be done. We seek for ourselves not size but efficiency, not legal authority but the confidence of our colleagues and of the public we serve. We hope that our aims of today will be "the experience of tomorrow".

Bacteriophage and Its Relation to Oral Infection. Leslie A. Sandholzer, *Am. Assoc. for the Advancement of Science,* Dental Proc. June 17, 1936, through *J. Am. Dental Assoc. 24,* 99 (1937). The conditions essential for the successful use of bacteriophage in the treatment of oral infections are seldom available. The therapeutic success reported by some workers with bacteriophage are therefore due to processes other than bacteriolysis. Protein shock from the lysate or lysate acting as a vaccine may stimulate other protective mechanisms in the host. There is also the possibility that the patient may be suffering from a temporary invasion of a non-pathogen which can be eliminated spontaneously. L. G.

The Therapeutic Active Principle of Maggots. S. K. Livingston, *J. Bone & Joint Surg. 18,* 751 (1936). Maggot therapy consisting of living maggots, maggot extract or a combination of these was used in 567 cases of chronic osteomyelitis, compound fractures and chronic leg ulcers. Eighty-eight per cent. were improved and discharged without discharging sinuses. The degree of success was 38 per cent. higher than in control cases which were treated by other methods. The healing and convalescence periods were shorter. Maggot active principle is considered superior to a combination of picric acid and $CaCO_3$, or allantoin, as it is also a growth-stimulating substance. Furthermore, with maggot therapy there is the lessened possibility of the conditions which cause a subsequent recurrence of the bone lesion. L. G.

COSMETIC CLEANSING CREAMS

By Peter P. Ramanuskas, B. Sc.

The Author is an industrial chemist who "hobbies" with cosmetic preparations. His formulas are novel and trustworthy, and it will be noted that they are additionally different and up-to-date.

IN addition to good health and normal activity in the functions of the skin, cleanliness is of paramount importance for maintaining a clear complexion. The accumulation of superficial scales of the epidermis, together with the sebaceous matter and waste-products excreted by the perspiratory glands, old make-up, dust and other elements of exposure to which the face is naturally subjected, must be frequently removed in order to insure normal activity in the functions of the skin.

The proper procedure for cleansing the skin depends upon the mode of living, environment and vocation of the individual. Cosmetic cleansing creams, although indispensable as aids for maintaining a clear complexion, cannot replace entirely the more efficient soap and water, as some people are led to believe, nor should they be used with the expectation of correcting a pathologic condition that calls for medical treatment. However, rough and unsightly skin, accompanied by large pores and blackheads can be much improved by the constant use of a good cleansing cream.

There are two types of cleansing creams in general use today; the emulsion or cold cream type and the melting or oily type. Many of the popular emulsion creams are similar in composition to the mineral oil type "theatrical cold creams" which were originally used by actors to remove their make-up. Those containing absorbable oils and fats are generally exploited as "All Purpose" creams, because they can be used, not only for cleansing, but when used sparingly after cleansing, they form a foundation for make-up and when used more generously and permitted to remain in contact with the skin for a longer period, the absorbable components are alleged to be beneficial skin lubricants.

The melting creams are essentially mixtures of oils, fats and waxes, so blended that they melt at body temperature. They are not as popular as the emulsion creams because they are not as easily removed and usually require additional treatment to overcome the "oily" feel they impart to the skin.

To be efficient a cleansing cream should melt at body temperature and have sufficient penetrating properties to flush the skin pores thoroughly and enough body or viscosity to hold in suspension all foreign matter so that they may be readily removed by means of a cloth or absorbent tissue, and leave the skin clean, soft and smooth. Aside from a slight bleaching effect produced by the presence of hydrogen peroxide in some of the emulsion type creams, most of the cleansing creams are purely mechanical in action. The use of absorbable constituents in this type of cream is not essential because as normally used they are not in contact with the skin long enough to impart their benefits. The employment of readily absorbable chemicals should nevertheless be avoided.

Notwithstanding the fact that open pores are prerequisite to thorough cleansing, some manufacturers produce cleansing creams having cooling or astringent properties. They are at their best only superficial in action because they prevent proper penetration and easy removal of foreign matter.

The following formulas have given satisfactory results over a period of time and should be of interest to the enterprising pharmacist who desires to make cleansing creams to meet specific requirements.

Formula No. 1 represents the cold cream type. The mineral oil should have a Saybolt Viscosity of 100 seconds @ 100° F.

FORMULA NO. 1

	Percentage by Weight
White Beeswax	10.
Spermaceti	5.
Cetyl Alcohol	2.
Mineral Oil	55.
Sodium Borate	.8
Distilled Water	27.2
Perfume q. s.	

Dissolve the sodium borate in hot water. Melt the white beeswax, spermaceti and cetyl alcohol together on a water bath. Add the mineral oil and stir until the mixture is uniform, keeping the temperature at 75° C. Gradually pour in the sodium borate solution,

heated to the same temperature, stirring rapidly and continuously, without heat, until the temperature drops to 45° C. Add the perfume and stir until the cream becomes of uniform consistence.

Formula No. 2 contains Deceresol; a commercially * available product that has considerable merit as a penetrating or "wetting out" agent.

FORMULA NO. 2

	Percentage by Weight
White Beeswax	8.
Spermaceti	8.
Petrolatum (Snow White)	8.
Mineral Oil	56.5
Deceresol OT (100% Dry)	1.5
Sodium Borate	.3
Distilled Water	17.7
Perfume q. s.	

Dissolve the sodium borate in hot water. Heat twenty-five grams of mineral oil to 130° C. Add the Deceresol and stir until the solution is clear. Remove from source of heat and add the remainder of the oil. Stir and add the petrolatum, spermaceti and white beeswax. Heat again, if necessary, to keep the temperature at 75° C., and proceed as in Formula No. 1.

Formula No. 3 contains in addition to Deceresol, Iso beeswax * and Ceresin. Iso beeswax is a scientifically created product having the emulsifying value of pure beeswax and especially adaptable for making soft cream emulsions. Ceresin M. P. 64° C. is a hydrocarbon wax with the same melting point as beeswax and is particularly suitable for making cosmetic creams.

*The American Cyanamid & Chemical Co., 30 Rockefeller Plaza, N. Y.

FORMULA No. 3

	Percentage by Weight
Iso-Beeswax	9.
Ceresin M. P. 64° C.	7.
Mineral Oil	52.
Deceresol OT (100% Dry)	1.5
Sodium Borate	1.
Distilled Water	29.5
Perfume q. s.	

Prepare as in Formula No. 2.

Formula No. 4 is an example of the melting type cream. Its solidity can be adjusted by adding or decreasing the oil content. Mineral oil having a Saybolt Viscosity of 75 seconds @ 100° F. is ideal.

FORMULA No. 4

	Percentage by Weight
Ceresin M. P. 64° C.	10.
Spermaceti	10.
Petrolatum (Snow White)	10.
Mineral Oil	70.
Perfume q. s.	

Melt together the ceresin, spermaceti and petrolatum. Add the mineral oil and stir. At 40° C. add the perfume. Stir and pour into jars.

THE MARCH OF THYME

By John E. Kramer, B. Sc.

"I know a bank where the wild thyme grows" has been parsed by many a student of English grammar. But here is a recital more interesting and informative than mere "parsing".

TO paraphrase the slogan of a popular current magazine and its equally popular radio program, it can truly be said that thyme marches on. Known in the third century B. C. to Theophrastus, the Father of Botany, and described by Dioscorides, the early Greek authority on materia medica, this little plant has, in its many variations, persisted through the ages.

In the eighteenth and nineteenth centuries, when, according to our modern standards, time was not so valuable, thyme was in the midst of quite a vogue. Its oil was official in the Pharmacopœia of the United States. Many kitchen recipes called for liberal quantities of thyme as a seasoner. It was a favorite shrub for bordering gardens.

At present it has retraced its steps a bit and is to be found in the National Formulary. Few housewives use it in their culinary practices and it is rarely seen in the drug stores.

There are about 120 species of thyme, 10 or 11 of which are important, but only two of which bear common recognition. Thymus vulgaris, Linne, also known as Common Thyme, Garden Thyme and Mother of Thyme, is a small shrub, native of Southern Europe. Its dried leaves and flowering tops are official as Thymus, N. F., which is used as a stimulant and a carminative. The thyme of commerce, however, is cultivated and gathered chiefly for its oil.

The other important species is Thymus serpyllum, Linne, also known as Wild or Creeping Thyme, native in Europe and Northern Asia. The flowering tops and dried leaves are used in the relief of whooping cough.

Oil of Thyme, official in the N. F., is distilled from the flowering Thymus vulgaris, and is valued for its action as an antiseptic and in the treatment of hookworm.

The name Thymus is derived from the Greek, indicating sacrifice, probably because of its sweet odor and the fact that it enhanced some ancient sacrificial pieces. The ancients grew it, and used it, and wrote

about it. It is reputed to have been eaten by the famous bees of Mount Hymettus, an elevation near Athens, on which has been produced, century after century, a very high and select grade of honey.

An English Herbal, printed in London in 1710 by a Dr. William Salmon, devoted four large and profusely illustrated pages to the five species of thyme recognized then. Some of the descriptive passages are interesting and are copied here.

"Thyme is used chiefly for Disease of the Head, Brain and Nerves, as Lethargies, Vertogo's, Palsies, Convulsions, Apoplexies, also for Sickness at Heart or Stomach, Faintings, Swoonings, Palpitation of the Heart, Obstruction of the Lungs, and the Strangury. It provokes the Terms in Women, expels both Birth and After-birth, and helps such as are dull sighted and have a bad Memory."

"You may make therefrom, 1. A Liquid Juice. 2. An Essence. 3. A decoction in Water and Wine. 4. A Decocted Oil. 5. A Pouder. 6. A Cataplasm. 7. A Distilled Water. 8. A Spirit. 9. A Distilled Oil. 10. Potestates or Powders. 11. A Spiritous Tincture. 12. An Acid Tincture. 13. An Oily Tincture."

"The Liquid Juice, Bathed upon Warts it takes them away."

Oil of Thyme was first recognized by the United States Pharmacopœia in its fourth revision in 1860. Thyme itself was first recognized by the National Formulary in its fourth edition in 1916. The current Pharmacopœia contains neither the oil nor the shrub, but both are to be found in the N. F. VI. Thus the forward march of thyme, or its oil, to be exact, ceased at about the beginning of the twentieth century.

However, thyme marches on in a different manner. From Thymus, oil of thyme is derived. From oil of thyme, the crystalline thymol is derived, and from this substance thymol iodide is manufactured. These latter two, thymol and thymol iodide, are official in the U. S. P. XI, and are important in present-day medicine as antiseptics.

For those who are sentimental about this pleasant plant, it is suggested that some of it be cultivated between flagstones. Persons using the walkway thus created scuff the plant and cause a faint, agreeable odor to arise and permeate the atmosphere. And so, the walk of thyme.

ABSTRACTS FROM AND REVIEWS OF THE LITERATURE OF THE SCIENCES SUPPORTING PUBLIC HEALTH

Bacteriology . . . . Louis Gershenfeld, B. Sc., Ph M.
Biochemistry, Nutrition, etc. . . . Arno Viehoever, Ph. D.
Biology . . . . . Marin S. Dunn, Ph. D.
Chemistry . . . . . Arthur Osol, Ph. D.
Pharmacy . . . . . E. Fullerton Cook, Ph. M.
and their assistants

Parachlormetaxylenol as a Preservative. E. A. Lum, *Pharm. J. 84,* 76 (1937). The chlorinated xylenols, of which parachlormetaxylenol is a well-known example, are being increasingly used, usually in saponaceous solution, as non-poisonous antiseptics and disinfectants. Parachlormetaxylenol is a white crystalline powder with a phenolic odor. In a saponaceous solvent it has a phenol coefficient of about 60. Phenols or cresols which are normally used for the preservation of vaccines in strengths of 0.25-0.50 per cent. have been frequently criticized because of their inefficiency. The synergistic action of parachlormetaxylenol when used with phenol 0.5 per cent. was tested by exposing a mixed bacterial vaccine containing 0.5 per cent. of phenol and 0.035 per cent. parachlormetaxylenol to a dusty atmosphere and comparing it with a control containing only 0.5 per cent. phenol. The results in the first case was a sterile product after ½ hour, 1 hour and 12 hours. In the case of phenol alone 0.5 per cent. the product was sterile after ½ hour, showed presence of staphylococci at the end of 1 hour and after 12 hours was heavily contaminated with staphylococci and in addition contained streptococci, diplococci and gram-negative bacilli.

L. F. T.

Tribasic Magnesium Phosphate. R. A. Cripps and D. N. Gore, *Pharm. J. 84,* 77 (1937). A considerable variation in this product has been encountered. Since the therapeutic value in respect to absorbing capacity and ability to neutralize probably depends upon physical char-

acter as well as chemical composition, it was thought desirable to examine the available material and, if possible, devise a simple test which would act as an index of basicity.

Ten commercial samples were analyzed. Two failed to pass the British Pharmaceutical Codex on the basis of their carbonate content. Of interest were two samples which passed the B. P. C. requirements but which were not considered satisfactory by the authors, inasmuch as they contained an appreciable proportion of acid phosphate which was not evidenced by the B. P. C. ignition test due to their lower water content. The authors suggest a supplementary test as follows: Weigh 1 gm. of sample into a titration flask and add 10 cc. of N/1 H_2SO_4. When solution is complete add 2 gm. of NaCl and 2 gm. of NH_4Cl and dissolve. Titrate the clear solution with N/4 NaOH, using phenolphthalein as indicator. The end-point is quite sharp, especially if the precipitate formed during the titration is allowed to settle after each addition when practically at the end-point. The authors suggest a back titration range of 39-41 cc. N/4 NaOH as assuring one of the proper quality of magnesium phosphate.

L. F. T.

Trends in Organic Chemicals from Petroleum and Natural Gas. B. T. Brooks, *Chem. Met. Eng. 44,* 18 (1937). The author describes recent advances in the manufacture, on a commercial scale, of organic chemicals synthesized from hydrocarbons derived from petroleum and natural gas.

Research in synthesis is all too frequently guided by the possibilities of application of the new products in already developed markets, a point of view which is not conducive to the development of new markets and the creation of new demands. In 1919, the directors of a chemical company ordered work on the manufacture of ethylene glycol discontinued and allowed their option on the patents to expire, on the ground that ethylene glycol was only a substitute for glycerin and had no established market or uses. The sale, at a later date, of millions of pounds of ethylene glycol, at prices substantially higher than those of glycerin, illustrates the fallacy of this viewpoint on the part of business interests. That business is not always at fault is illustrated by the fact that today the commercial production of synthetic ethyl alcohol from ethylene is an established process despite the claims of many

orthodox chemists who for thirty years argued that this synthesis could not be carried out commercially.

Up until the present, the direct manufacture of pure organic chemicals from oil and gas has been practically limited to substances derived from hydrocarbons of not over five carbon atoms. Of the many valuable substances obtained by the decomposition of gaseous hydrocarbons at high temperatures two which have found many uses as intermediates in the production of other chemicals are ethylene and acetylene. Ethylene made by cracking hydrocarbons is the commercial raw material for synthetic alcohol and ethylene glycol in the United States. Further, it is not improbable that acetic acid will soon be made from alcohol synthesized from ethylene, for in England 20,000,000 pounds of acetic acid are produced annually by catalytic oxidation of fermentation ethyl alcohol. At present much the greater part of our synthetic acetic acid is made from acetylene by way of acetaldehyde. By a slightly different process acetylene may be converted to acetic anhydride through the intermediate formation of ethylidene diacetate.

Propylene, another intermediate obtained by fractionation and cracking, promises to be even more important than acetylene and ethylene. Among the products derived from the former are isopropyl alcohol, already competing with ethyl alcohol in many of its industrial applications. By catalytic dehydrogenation of isopropyl alcohol, acetone may be obtained on a commercial scale and this chemical, by first converting it to ketene, can be used in the manufacture of acetic anhydride, an exceedingly important synthetic chemical. Isopropyl ether, another product of isopropyl alcohol, has recently become prominent as a result of the discovery that a blend of it with selected gasoline stocks, and with 1 cc. of ethyl fluid per gallon, yields an aviation fuel of 100 octane rating. Applications and derivatives of other oil and gas hydrocarbons are discussed in the paper A. O.

Tested Formulas—Lubricating Creams. Jos. Kalish, *Drug & Cosmetic Ind. 40,* 202 (1937). The author classifies a lubricating cream as one which attempts to replenish the natural oil supply in the skin. He discusses absorption into the skin and the general characteristics of oils suitable for this purpose, including new ethyl esters of fatty acids, lard, hydrogenated oils, cocoa butter, cetyl alcohol, wool

fat. The use of other substances as cholesterin, lanolin, lecithin, vitamines and hormones is also mentioned. Preservation against bacteria and also against air oxidation is essential. New absorption bases, lanolin and glyceryl monostearate are mentioned as emulsifiers for the preparation of the creams. Paraffin, ceresin and spermaceti are useful as hardening agents, while petrolatum may prevent leakage of oil. Typical formulas are included as follows:

1.

Beeswax	9.0
Paraffin	8.0
Cetyl Alcohol	1.0
Hydrogenated Oil	5.0
Lanolin	5.0
Mineral Oil	16.0
Vegetable Oil	15.0
Borax	0.6
Water	40.4

A white cream, medium consistency, very slight graininess.

2.

Glyceryl Monostearate	12.0
Cetyl Alcohol	0.5
Lanolin	7.0
Vegetable Oil	10.0
Water	70.5

Off-white, medium soft cream, completely absorbable.

3.

Spermaceti	5.0
Cetyl Alcohol	2.0
Lanolin	20.0
Hydrogenated Oil	50.0
Water	23.0

Dull finish, yellow-white, hard cream.

4.

Beeswax	10.0
Paraffin	6.0
Cetyl Alcohol	0.5
Lanolin	10.0
Mineral Oil	37.0
Borax	0.5
Water	36.0

White, medium soft, lustrous cream.

5.

Paraffin	10.0
Lanolin	40.0
Mineral Oil	20.0
Water	30.0

Medium hard, stringy, yellowish cream.

6.

Paraffin	10.0
Lanolin	35.0
Mineral Oil	15.0
Vegetable Oil	15.0
Water	25.0

Yellowish, hard cream.

The following general directions are suggested: For beeswax creams, dissolve the borax in water and add it to the melted mixture of fats and oils, stirring rapidly at first and slowly until cold. For glyceryl monostearate creams, either melt all the components together and stir until cold, or heat the oily and the water soluble components separately and then mix them and stir until cold. For lanolin type creams, melt the fatty mixture at a low temperature and slowly stir in the water in small portions. A. B. N.

Optical Lenses from Plastics. Anon., *Chemical Age, 36,* 140 (1937). Through the efforts of British research scientists, an entirely new method has been invented for the production of optical systems (lenses) from plastic materials. Using specially designed molding machines it is possible to produce lenses already polished and ready for mounting into cameras, binoculars, spectacles, and all scientific instruments with an optical system. The lenses are made by special treatment for their particular purposes from various plastic and transparent materials. They are unbreakable, have half the weight of glass, and have certain optical properties which are stated to be superior to glass. One of the plastics used in the process is known as "Perspex", a material recently developed by Imperial Chemical Industries, Ltd. The new method of manufacture obviates all the long and expensive grinding and polishing operations required in the fabrication of glass optical systems. A. O.

Public Health Aspects of the Treatment of Water and Beverages With Silver. J. Gibbard, *Amer. J. Pub. Health, 27,* 112 (1937). The commercial use of silver in the treatment of water, milk, beer, wine, fresh fruit juices, etc., as a bactericidal and preserving agent has added another metal to the list of those used either intentionally or incidentally. The author has conducted many experiments with silver in the elemental, colloidal and ionic forms and has reached the conclusion that the bactericidal activity of silver is due entirely to the presence of ionized silver. The presence of an active reducing substance such as glucose, or the presence of proteins has a lowering effect on the efficiency of the oxide or salt as a bactericide. Silver which has been melted and cooled in hydrogen gave no evidence of bactericidal properties, but if metallic silver be heated in air and cooled by dropping in water the oligodynamic properties are more pronounced. Grape juice

which was supposed to be treated with silver showed no evidence of its presence when examined bacteriologically or by means of the spectroscope. As no data are available to show the fate of ingested silver, its significance to public health is still a matter of assumption. The author recommends its use as a preservative be limited until conclusive evidence is found that added silver is not injurious to the public health. Tables are given to show the amounts of silver found in a variety of juices, etc., packed in tin and glass containers. W. G. B.

Grey Powder—A Study of the Method of Preparation and the Effects of Storage. I. Roberts, *Quart. J. Pharm. & Pharmacol. 9,* 684 (1936). It has long been known that during the storage of Grey Powder a certain amount of oxidation takes place with the formation of both mercurous and mercuric oxides. The presence of the former does not materially affect the therapeutic action of the powder but the latter may dissolve in the gastric secretion and, if present in more than slight traces, will considerably increase the potency of the powder.

The U. S. P. XI method of extracting the mercuric oxide, namely, digesting a sample with dilute hydrochloric acid for 15 minutes at 40° C. was found to incompletely dissolve the oxide present. Boiling the sample with dilute hydrochloric acid for 5 minutes was found to completely dissolve the oxide although boiling over an excessive period of time gave high results due to the slow oxidation of the mercury.

In the presence of added dextrose difficulty was found with the B. P. test for mercuric mercury. The best procedure was found to consist in extracting such dextrose with water prior to the analysis. Such extraction must be done in the cold as boiling the powder with water causes a reduction of the mercuric oxide by the dextrose.

Wood charcoal which had been previously recommended as an anti-oxidant was found to actually accelerate the formation of mercuric oxide. Light and air have very little effect on its rate of oxidation, although heat was found to increase the rate somewhat. Dextrose in small amounts retarded considerably its deterioration. In the manufacture of pills from Grey Powder the presence of dextrose was distinctly undesirable inasmuch as there occurred a greater coalescence of mercury globules. Tablets made from Grey Powder containing 1-2 per cent. of dextrose were however about on a par with those made in the absence of dextrose.

Finally, Grey Powder was observed to lose a considerable amount of mercury through volatilization when stored in an open container or in powder papers and, consequently, it is advisable to store this material in well-closed containers to avoid such loss. L. F. T.

Parthenocarpy Induced by Pollen Extracts. F. G. Gustafson, *Amer. Jour. Bot.* 24, 102 (1937). Many examples of parthenocarpy (the development of fruits without fertilization of the egg in the ovary) exist, as in the banana, seedless grape, orange and grapefruit. The author (Gustafson) is interested in the cause of fruit development without the customary growth of the ovary containing the embryo and later the resulting seed.

Since 1902 when dead pollen was observed by Massart to produce a slight enlargement of orchid ovaries, attempts have been made to determine the cause of fruit development when no embryos are formed. In 1936 Gustafson caused fruits to develop parthenocarpically by treating pistils with chemical compounds. Indole-3n-propionic acid produced normal-sized but seedless fruits of tomato, Petunia and Salpiglossus. Indole-acetic aid caused the production of seedless fruits of these plants as well as those of the eggplant, Begonia and pepper. Indole-butyric acid also caused the production of seedless fruits of the plants just mentioned. Many other plants treated showed initiated ovarian growth or negative results.

Literature cited shows pollen extracts and certain chemicals when applied to the stigmas or injected into the ovaries, cause changes in many plants which normally occur only as the result of fertilization, producing growth, and in some cases the development of seedless fruits.

In more recent work by the author pollen extracts from common plants were made with chloroform, evaporated and made into pastes with lanolin. The pastes were applied to the cut surfaces of unpollinated pistils, and all chance of subsequent pollination prevented. A large number of the experiments were unsuccessful, but the following were among those producing results. Petunia hybridia pollen extract produced a seedless pepper and seedless eggplants. Zea Mays (corn) extract caused the growth of Salpiglossus ovaries. Pinus ponderosa extract caused the growth of Salpiglossus and tobacco ovaries. Althea rosea (hollyhock) extract produced growth in ovaries in Salpiglossus, Petunia and tobacco. Cucurbita maxima (Hubbard squash) extract produced growth and seedless fruit of cucumbers. Cucurbita mos-

chata (crookneck squash) extract produced growth in ovaries of Hubbard squash, cucumber and crookneck squash. Controls with pure lanolin produced negative results.

These experiments indicate that the pollens of some plants contain a growth promoting substance (or substances) which sometimes cause the continuation of the growth of ovaries into fruits. The amount, activity and specificity of the substance remains uncertain. The pollen substance seems to be identical or closely related to plant hormones previously discovered.

In the opinion of the abstractor it appears that the production of many useful fruits, minus the objectionable seeds and placental regions, is not beyond the bounds of realization through the agency of artificial parthenocarpy. E. H. MAC L.

The Effect of p-Aminobenzene Sulfonamide (Prontylin) on Pneumococci in Vitro. S. M. Rosenthal, *Public Health Reports 52,* 192 (1937). It has previously been shown that p-aminobenzene sulfonamide possesses curative action in experimental pneumococcus infections in mice. This compound along with Prontosil and Prontosil-soluble has been found effective experimentally and clinically against infections with hemolytic streptococci. According to the experiments herein reported the action of Prontylin on pneumococci *in vivo* was not to any appreciable extent shared by Prontosil or Prontosil-soluble.

A study of the action of Prontylin on organisms *in vitro* has shown that this compound possesses marked bactericidal and bacteriostatic power against pneumococci (and meningococci) while no such effects were present on hemolytic streptococci, staphylococcus albus and E. coli.

In a discussion by the author the following points are emphasized. The bacteriostatic and bactericidal action of Prontylin on pneumococci *in vitro* is adequate to explain its chemotherapeutic effect in animals. The nature of this action *in vitro* is unusual in that the drug is not an antiseptic in the usual sense. The specificity of its action upon certain organisms as well as its low toxicity for animals, differentiates it from the class of antiseptics that are general protoplasmic poisons. The action towards streptococci is interesting. Thus the drug is more effective against streptococci than pneumococci in animals, but not even inhibitory to growth of streptococci in the test tube.

L. F. T.

CHLORINE-CONTAINING COMPOUNDS AS BACTERICIDAL AGENTS

By Louis Gershenfeld, P. D.; Ph. M.; B. Sc.

The following researches on chlorine-containing compounds reported at the last annual meeting of the Society of American Bacteriologists in Indianapolis are of interest:

Comparison of the Germicidal Efficiency of Hypochlorites of High and Low Alkalinity. S. M. Costigan, *J. Bact., 33,* 32, 1937. Studies were made on the comparison of the germicidal efficiency of hypochlorite solutions of 200, 100 and 50 parts of available chlorine per million parts of water, prepared from hypochlorites of high and low alkalinity.

The results show that even in the presence of high concentrations of organic matter satisfactory killing and not inhibition occurs. The strongly alkaline hypochlorite is more germicidal against the Gram-negative organisms than against the Gram-positive; however, the hypochlorite of low alkalinity is more germicidal against both the Gram-negative and Gram-positive organisms than the hypochlorite of high alkalinity.

The Efficiency of Commercial Chlorine-Containing Compounds Used in Various Cold Sterilization Procedures. Don C. Lyons, *J. Bact. 33,* 34, 1937.

A study was made of a number of representative commercial compounds which are sold for the purpose of cold sterilization of glassware, etc., in restaurants, beverage dispensing establishments, and roadside stands. These compounds were of the type which bases its sterilizing or germicidal activity on the presence of available chlorine in compounds like calcium hypochlorite, sodium chloramide, etc. Rinse solutions when made up according to label directions are presumed to conform with state or local regulations concerning parts per million, chlorine to water.

It was found that there was considerable variation in the actual available chlorine in these compounds as analyzed by the sodium thiosulfate test, or the orthotolidine test, and that, due to methods of marketing, many of the compounds are apparently worthless when they reach the consumers. Further, due to the relative unstability of

the compounds or the rapid vaporization of the available chlorine after the packages are opened, many rinse solutions as made up are substandard or do not conform with regulations, although prepared according to package directions.

Change in merchandising or packaging of chlorine compounds is advised along with education as to the necessity of frequent changing of the solution. New products, which are stable and which can be tested quickly and easily for efficiency of germicidal activity, are needed for cold sterilization procedures.

Public Drinking Glass Sanitation in a Southern City. Seth T. Walton, H. M. Morton, and Mary T. Davis, *J. Bact. 33,* 94, 1937. In a bacteriological survey of public drinking glasses and rinse waters made in Charlotte, N. C., 252 glasses and 117 samples of rinse water were examined for the presence of total bacteria, hemolyzing bacteria, streptococci, organisms of the colon-aerogenes group and of Vincent's angina. Soda fountains, cafes, and beer saloons were included in the survey.

Samples were collected at the establishment in sterile containers and transferred to the laboratory for examination. Counts in rinse waters ranged up to millions per cubic centimeter, including thousands of coli colonies. On glasses many thousands of bacteria per glass were recorded with positive tests for the colon-aerogenes group. Hemolytic streptococci and Vincent's organisms were frequently present.

As a result of the survey a city ordinance was passed recently requiring sterilization by chlorine, but to date no studies have been made to determine the efficacy of this method of sterilization.

Effect and Efficiency of Germicides and Fumigants on Microorganisms Associated With the Baking Industry. Gerald K. Ashby, C. C. Hedges, and E. H. Gibbons, *J. Bact. 33,* 96, 1937. In a study to determine the effect of germicides and fumigants on bacteria that produce "rope" in bread, five species of the genus *Bacillus,* proven to produce "rope" in bread, were used. Spores of these organisms, suspended in veal infusion, wheat flour suspension, and in saline, were exposed to: hypochlorites; formaldehyde; acetic acid; and phenol. Spores of three of these species were also exposed to hypochlorite spray and to formaldehyde gas.

Five per cent. phenol was found to be ineffective. In disinfectant solutions containing wheat flour or saline, hypochlorites were very effective while formaldehyde and acetic acid were not. Not only hypochlorites, but also the other disinfectants were ineffective in solutions containing veal infusion.

As fumigants, the hypochlorites seemed to be ineffective while formaldehyde, if used in strong enough concentrations, was very effective.

For a study of the protective action of wheat flour and of fat in fumigation, contaminated specimens of wood, web belting, and of metal were heavily coated with wheat flour and with melted shortening. No protective action of the wheat flour could be demonstrated, but shortening afforded the test organisms considerable protection against the fumigants.

From a comparison of the relative strengths of the germicides as used in solution and as fumigants, it appears that hypochlorites may be effective in spray form if strong enough solutions can be used without causing corrosion of the materials sprayed.

NON-LIVING PROTEIN CAUSING DISEASE IN ANIMALS

In last month's issue of this JOURNAL, in a consideration of the "Nature of Viruses," mention was made of the fundamental discovery of far-reaching significance made by Dr. W. M. Stanley of the Rockefeller Institute. Due to his researches on the tobacco mosaic virus, it is possible now to state that inanimate molecules of protein may serve as infectious disease-producing agents. The work of Dr. Stanley and his associates has been confined to virus diseases in plants. This was however regarded as typical of all viruses and their researches were regarded as being of considerable value in the study of virus diseases in man and animals.

Studies made by Drs. J. W. Beard and Ralph W. G. Wyckoff, also of Rockefeller Institute (*Science, 85,* 201, 1937), present the first indication that non-living protein may cause disease in animals. From western cottontail rabbits infected with so-called warts (known as papillomas, masses which are in reality epithelial tumors), they isolated a high-molecular protein. These masses were always regarded as being virus induced and the isolated protein possessing the infectiousness of the disease is not merely directly associated with the

latter, but it appears that the virus activity is a specific property of this isolated protein. The researches of Drs. Beard and Wyckoff are the first to link non-living protein to animal disease. The unusual stability of the virus causing infectious papillomatosis accounted for the use of this agent in the study reported here. An important step forward is thus made in a possible more definite understanding of the nature of viruses. Furthermore the diseases they cause in animals acquire a new significance due to the findings revealed in this investigation. L. G.

Anesthetic Ether. A. Man'kov and Z. Larionov, *Org. Chem. Ind. U. S. S. R. 1,* 161 (1936), through *Quart. J. Pharm. & Pharmacol. 9,* 718 (1936). Tests have shown that solid potassium hydroxide is capable of retarding the formation of aldehydes and peroxide compounds in anesthetic ether for a period of nine months in opaque containers and for 450 hours on exposure to sunlight. The formation of peroxides is retarded and that of aldehydes slightly increased in the dark by iron shavings, while in diffused light the decomposition of ether is considerably accelerated by iron and even more by reduced iron. The best method of storage is to keep the ether over solid potassium hydroxide in bottles covered with black paper. L. F. T.

Vitamin D Content of Menhaden Fish Oil. W. C. Supplee, *J. Ind. Eng. Chem. 29,* 190 (1937). The tremendous requirements of the feed industry for cheap sources of vitamin D give significance to new economical sources of supply. Menhaden oil, a product of American fisheries, is ordinarily marketed for industrial purposes at a much lower price than that of cod liver oil and sardine oil now sold to the feed industry. The potential value of Menhaden fish oil as a source of vitamin D has already been reported. The present paper reports the results of two samples of Menhaden oil specially prepared. The test method employed was the A. O. A. C. tenative chick assay method for Vitamin D carriers. Oil from thin fish was found to contain about 160 units/gm., whereas an oil from a fatter grade of fish contained lesser amounts, namely, 80 units/gm. of vitamin D. The author recommends the use of Menhaden caught in early summer for oil to be used as a source of vitamin D, inasmuch as the vitamin content from such oil is higher, the fish being less fat. L. F. T.

EVALUATION OF DRUGS

Review by Arno Viehoever

Digitalis

As is well known, various methods have been recommended for the evaluation of digitalis, its preparations, and also for other drugs, classified with digitalis as heart stimulants.

Literally fifty-seven varieties of assay methods have been proposed, states J. C. Munch in his recently published manual of biological assaying. In his book on bioassays he enumerates those proposed up to the year 1930-31. More recent suggestions are referred to in the chapter on pharmacology and bioassays in the annual surveys of research in pharmacy, and in the monographs on digitalis by Weese 1936 and that on digitalis bodies and related glucosides by Lendle 1935. (Supplement to Heffter's handbook of exper.-pharmacology.)

Among the experiments, which have been published, comparing the best known assay methods, the following deserve to be recorded in English literature. They were carried on in the pharmacological institute of the Tokyo Imperial Institute by A. Tokita and published in the Japanese *Journal of Medical Sciences 4. Pharmacology* (p. 161 ff. 1933).

The Japanese Pharmacopœia determines the value according to the Focke method, while the International Committee recommends the four-hour method of the frog and the Hatcher-Magnus cat method. Besides there is the intravenous injection method of Uhlman, Straub's method, Langendorf's method, etc.

Tokita conducted comparative investigations of these methods of evaluation, as well as of the Tamura Sato Kobayashi transfusion method of the frog's heart. The latter is used at present in the pharmacologic institute as a method of evaluation of this heart tonic.

The methods heretofore used for the evaluation of the digitalis group are for the most part toxic activity tests, and not determinations of therapeutic effects. Toxicity does not always go hand in hand with therapeutic action. If one adopts the systolic cessation of the heart as a symptom in toxic evaluation, one must use also a large amount of concentrated infusion of digitalis and at the same time note the action

of other substances contained in them, like potassium, saponin, etc. But in determining the minimum active concentration in the transfusion of the frog heart, one can exclude such side effects.

I. Focke's Method

Everything was carried out according to the description of the Japanese Pharmacopœia. At the stopping of the heart the lymph sac was opened and the amount of unresorbed liquid measured, which contained the active substance. The room temperature was 18°-22° C.; the body weight of the frog (Rana nigromaculata) was about 20 gm. The amount of unresorbed liquid occasionally was more than that of the injected solution. The shortcoming of this method is the imperfect resorption of the injected solution and the variability of the vitality of the animals. In consequence of these shortcomings, the value obtained varied. The results briefly were as follows:

TABLE I

EVALUATION WITH FOCKE'S METHOD

No.	Preparations	Value	Flow (ccm.)
1.	1000:1 Ouabain	6.98	0.03
2.	Digitamin	4.1	0.04
3.	10% Ext. Fol. Dig. Pul. Sankyo (Jap. E. M.)	3.64	0.33
4.	Pangital	2.56	0.31
5.	Digifolin	2.24	0.225
6.	Liquitalis	2.08	0.135
7.	10% Ext. Fol. Dig. Pul. Brit. (Jap. E. M.)	1.9	0.107
8.	Digitoxin (1000:1)	1.44	0.27
9.	Digalen	1.38	0.302
10.	10% Ext. f. dig. con. Sankyo (Jap. E. M.)	1.11	0.22
11.	1000:1 Digitalin	0.74	0.10
12.	Digotin	0.26	0.22

Flow: is the non-resorbed liquid.
Jap. E. M.: is the Japanese extraction method.

2. The Four-Hour Frog Method

Everything was carried out according to the method of the International Committee. The extract of the leaves was diluted into a 4 per cent. solution, the commercial preparations were administered in a

40 per cent. solution. The resorption is almost perfect in this method, except in digotin, which must be injected in large amounts because of its low value. The resorption is mostly complete within four hours; indeed the speed of resorption plays a large role in the evaluation. If the speed of resorption is greater, then the value is higher. One cannot measure with perfect accuracy the injected amount in the injection. Also the vitality of the frog is decisive in the evaluation, so that one, by this method, cannot decide the real toxic value. This method, however, surpasses the Focke method.

The results are recorded in the table below.

TABLE II

EVALUATION WITH 4-HOUR FROG METHOD

No.	Preparations	Pro g. Max. Dosis	
1.	1000:1 Ouabain	0.0020	(2500:1 solution)
2.	Digitamin	0.0150	(2.5:1 ")
3.	Ext. Fol. Dig. Pul. Sankyo (Jap. E. M.)	0.0033	(25:1 ")
4.	Pangitalin	0.0160	(2.5:1 ")
5.	Digifolin	0.0150	(2.5:1 ")
6.	Liquitalis	0.0155	(2.5:1 ")
7.	Ext. F. Dig. Pul. Brit. (Jap. E. M.)	0.0057	(25:1 ")
8.	1000:1 Digitoxin	0.0026	(2500:1 ")
9.	Digalen	0.0125	(2.5:1 ")
10.	Ext. Fol. Dig. Con. Sankyo (Jap. E. M.)	0.0110	(25:1 ")
11.	1000:1 Digitalin	0.0260	(2500:1 ")
12.	Digotin	0.0620	(2500:1 ")

3. The Intravenous Injection Method

One injects the solution into the Vena cutanea Magna of the frog with the speed of the blood stream. Otherwise one follows the Uhlman method. One opens the skin with an electro-knife. The injected quantity amounts to per gram 0.001 ccm., 0.003 ccm., 0.005 ccm., 0.007 ccm., and 0.01 ccm. and one investigates with every amount 3 to 5 frogs. The value, compared with each other, is not constant. For example, the value obtained per gm. 0.01 ccm. injection amount in a preparation was higher, and per gm. 0.03 ccm. in a preparation lower. This is caused by the effect of the different substances in addition to the actually effective glucoside. One can recognize consequently by this method the contradiction. In this evaluation one must take into consideration the resistance of the frog.

TABLE III

EVALUATION WITH INTRAVENOUS INJECTION METHOD

No.	Preparations	Amount of Injection (pro g.) 0.01 ccm.	0.007 ccm.	0.005 ccm.	0.003 ccm.	0.001 ccm.
1.	1000:1 Oaubain	4m24s	4m47s	9m26s	11m22s	63m*
2.	Digitamin	4m20s	4m59s	5m27s	8m42s	over 10h
3.	10% Ext. Fol. Dig. Pul. Sankyo (J. E. M.)	3m8s	3m16s	3m20s	3m30s	12m47s
4.	Pangital	3m26s	3m28s	3m34s	3m44s	over 10h
5.	Digifolin	3m47s	3m49s	6m1s	17m	over 10h
6.	Liquitalis	5m10s	5m20s	5m34s	5m52s	over 10h
7.	10% Ext. Fol. Dig. Pul. Brit. (J. E. M.)	6m12s	7m10s	8m7s	10m9s	1h13m
8.	1000:1 Digitoren	18s	20s	31s	33s	10m51s
9.	Digalen	5m54s	8m17s	11m30s	18m30s	over 10h
10.	10% Ext. Fol. Dig. Con. Sankyo (J. E. M.)	3m53s	4m15s	5m55s	7m45s	over 10h
11.	1000:1 Digitalin	6m	8m10s	9m30s	17m15s	over 10h
12.	Digotin	20	25	30	2h	over 10h

*m—minutes; s—seconds.

4. Straub's Method

Everything was carried out according to Straub's procedure. In a more concentrated solution of the changing reagent, one finds the actions of other substances in addition to the active glucoside, presenting the same disadvantage as the intravenous method. In a weaker solution of a preparation there occur no constant results. By this method one cannot determine the least effective concentration. This method is not very applicable as an evaluation method of the toxic value.

5. Hatcher-Magnus—Cat Method

Everything was carried out according to the technique of Hatcher and Magnus. One dilutes the extract of the powder to a .5 per cent. solution acording to the Netherland Pharmakopœia. The results give practically constant values with the same preparation. The advantages of this method can be recognized by the facts that the animals under investigation are warm-blooded, that relatively long hours are necessary until the heart ceases to beat, and that as the method of evaluating toxicity it is the best. The results are as follows:

TABLE IV

EVALUATION OF THE HATCHER-MAGNUS CAT METHOD

No.	Preparations	No. of Fatal Cat Doses	
1.	Ouabain	97.33	(1 ccm. of 100:1 solution 1 g. powder)
2.	Digitoxin	26.62	(" " ")
3.	Ext. F. D. Pul. Brit.	17.9	
4.	" Tonbo	14.1	
5.	" Sankyo	14.0	
6.	Pangital	13.4	(1 g. Pulv. Pangitale 10 ccm. Pangital)
7.	E. F. Dig. Pul. Fukisawa	10.0	
8.	Digalen	8.2	(1 g. Pulv. Digalene 10 ccm. Digalen)
9.	E. F. Dig. Conc. Sankyo	7.6	
10.	Digitamin	7.4	(1 g. Pulv. Digitamin 10 ccm. Digitamin)
11.	Liquitalis	4.4	(1 g. Pulv. Liquitalis 10 ccm. Liquit.)
12.	Digitalin	2.32	(1 ccm. of 100:1 solution 1 g. powder)

6. Tamura-Sato-Kobayashi Transfusion Method of the Frog-Heart

Tokita measured the least active concentration according to the modified Kobayashi method, which is now used in the Japanese pharmacological institute. By this method the concentration is so diluted that one needs to pay no attention to the influence of potassium, saponin and various other substances. The author measured still further the toxic concentration whereby arrythmia, irregular rhythm in heart action occurred.

TABLE V

EVALUATION WITH TRANSFUSION METHOD

No.	Preparations	Activity concentration	Toxicity concentration
1.	Ouabain	300,000,000:1	1,000,000:1
2.	Digitamin	20,000:1	1,000:1
3.	Ext. Fol. Dig. Pul. Sankyo (J. E. M.)	500,000,000:1	3,000:1
4.	Pangital	35,000:1	2,000:1
5.	Digifolin	100,000:1	800:1
6.	Ext. Fol. Dig. Brit. (J. E. M.)	10,000,000:1	1,500:1
7.	Digitoxin	100,000,000:1	2,000:1
8.	Ext. Fol. Dig. Con. Sankyo (J. E. M.)	1,500,000:1	1,500:1
9.	Digitalin	30,000,000:1	200,000:1
10.	Ext. F. Dig. Pul. Fujiwasa (J. E. M.)	100,000:1	2,000:1
11.	" " Tonbo	20,000:1	3,000:1
12.	Digalen	1,000:1	500:1

7. Langendorf-Gunn's Method

Tokita measured the minimum concentration by alternating the method with the guinea pig heart. The results coincided with the results obtained with the frog heart. Moreover the time, even to the cessation of heart beat, was measured by this method in a thousand times concentration, (in commercial preparations 100 times) in order to ascertain the toxicity.

Conclusion

Tokita concluded that the results obtained with the isolated frog heart agreed with those obtained with the heart of the warm-blooded animals. The cat method is the best for the determination of toxic evaluation. Toxicity however does not go parallel with the therapeutic effect. In a preparation the toxic value may be high, the therapeutic value however low. Therefore one must not rely upon the various toxic methods of evaluation.

In this connection it may be of interest to refer to the biological assay method, elaborated by Edith M. Hall of the Lankenau Research Institute, Philadelphia, *Am. J. Pharm. 104,* 310-18 (1932), using the toxic effect, stopping the heart of the 72-76-hour chick embryo in a given time. Her results compared favorably with those obtained with U. S. P. frog method and the Reed-Vanderkleed guinea pig method.

The use of daphnia as a test animal, previously suggested by the reviewer, would permit the standardization both of the toxicity on the normal heart as well as the activity, stimulating the heart, after having been depressed under controlled conditions.

Relative in Vitro Activity of Certain Antiseptics in Aqueous Solution. Robert N. Nye, M. D., *Journal of the American Medical Association,* Vol. 108, No. 4, pp. 280-287 (1937). A series of tests were carried out on numerous proprietary and non-proprietary antiseptics, including solutions containing iodine, mercury, chlorine and miscellaneous solutions. The antiseptics were tested for (1) bactericidal activity, (2) bactericidal activity in mixtures containing 50 per cent. horse serum, (3) diffusibility, and (4) toxicity. From the results obtained in these tests it was concluded that an aqueous solution of iodine is the most satisfactory of the antiseptics tested.

L. A. R.

SOLID EXTRACTS

By Ivor Griffith, Ph. M., Sc. D.

Despite the form in which this information is presented it may be accepted as trustworthy and up-to-date. Original sources are not listed but they may be obtained upon request.

"Surgical maggots" that burrow into infected wounds, consuming the purulent and putrid material and promoting healing in the cleaned parts are still in good standing with many surgeons in spite of their rather indelicate and unrefined reactions. It is said that as the larvæ grow they excrete in their saliva proteolytic enzymes that act on the infected tissues and the scavenger maggots follow in their wake assimilating the products of this proteolysis. A somewhat different explanation of the action of the maggots is that which ascribes an important function to the maggot excrement. The excreta of maggots have been shown to contain allantoin, which is known to stimulate cell-proliferation, but it is also claimed that there is present in the excrement a most powerful bactericide. This association of a substance which is destructive to bacteria with one which causes cell development may well account for the beneficial results seen in this larval treatment.

"How do the maggots know when to stop burrowing?" is a question often asked. The answer is simple. They do not attack or eat healthy tissue and when they have done their "dirty work" they roll off or rest in peace.

"Crickets on the Hearth" augur good luck, and in the older countries the cricket's chirp is merry music on all occasions, but particularly when the moon is full and cheery.

Actually, however, the cricket is more of a pest than a pet.

There are two kinds of crickets common in the United States—the black field cricket, which does not breed indoors, and the pale brown house cricket. Like other crickets, the brown variety is a night carouser, and like many another carouser is fond of warm places about the furnace or heating pipes. Both types of crickets will attack

clothing and rugs, etc. They sleep away the winter and are wide awake all summer.

It is not difficult to rid a house of crickets. They are very fond of sweet liquids and will readily consume such fluids with which insecticides may be mixed. The lure should be set near their warm nesting place.

Holes eaten by crickets are very similar to those made by moths and sometimes a housewife may blame the wrong insect for damaging a garment.

Consumer's Research has recently hung its customary crepe on bland oils used for nasal care and comfort. They based their conclusions on occasional cases reported in the medical literature where the nose oil (usually mineral oil) was detoured accidentally from its wonted esophagal path, through the trachea into the lungs. The report of these few isolated cases out of millions of instances of common use of the time-honored bland oils is sufficient warrant for these swashbuckling, omniscient crusaders, to incriminate and vilify the simple practice.

The same type of reasoning would relegate to the scrap heap the useful button, the well-known safety-pin and many such commonplaces, because children have been known to "inhale" even such things as these into their lungs.

Ask any bronchoscopist!

But it takes more than the brayings of silly propagandists to break up a practice long established and justified by common sense.

Moreover, a group so smugly convinced of its capacity to pass judgment on everything from washers to motor cars, from cameras to cosmetics, and from nose drops to vanilla, is a group that the sensible person can well afford to ignore.

Who was the first chemist? The answer is, at once, "He who created heaven and earth—from chaos." But we were particularly thinking of Adam's progeny.

Tubal Cain, seven generations removed from Adam, was a metallurgical chemist, an artificer in bronze and every kind of metal. In

the Semitic languages, it is interesting to note, the vowels are relatively unimportant. They are indicated by dots and little lines above and below the consonants, which alone commonly make up the written language. In many languages B *and* V *are indistinguishable from each other. VuLCaN and (T)uBaLCaiN are evidently the same name, a foct which supplies further evidence that the ancient peoples all recognized the importance of the early applications of fire chemistry. Elijah, when he poured into the pot of death at Gilgal the adsorbing clay and so precipitated the poisons, may be rightfully considered the first practical colloid chemist.*

"Auxine" is its name. It is a growth promoter found in the tip (and the tip only) of growing plants. Its discovery is relatively recent, and now *auxines,* in the form of several organic chemicals, will be available to gardeners, because these substances have also the property of stimulating root growth.

These products are new—and patented! But listen—in Wales it is an ancient custom to assist the growth of cuttings or slips by wrapping around the earth-end several grains of sprouting oats or other cereal seed.

Potato sprouts have also been used, placed in the soil with cuttings of geraniums, roses or fuchsias.

Truly the art of the ancients was in knowing how—not why!

"Experto crede; aliquid amplius in silvis invenies quam in libris. Ligna et lapides docebunt te quod a magistris audrie non possis." So said St. Bernard in 1135 A. D., in an epistle to Master Henry Murdach, afterward Archbishop of York. It is roughly translated: "Believe one who knows—there is more in the woods than in books Trees and stones will tell you what your masters cannot."

Shakespeare is usually credited with the statement, his oft-quoted bit of verse from "As You Like It," conveying the same sentiment, though many centuries later:

"Finds tongues in trees,
Books in the running brooks,
Sermons in stones—and good in everything."

Two famous Frenchmen had a peculiar distaste for physicians. Napoleon I is often quoted as saying, "Water, air and cleanliness are the chief articles of my Pharmacopœia," and Voltaire, the iconoclast, wrote, "A physician is one who pours drugs of which he knows little into a body of which he knows less."

But the Bible is kinder by far to practitioners of the healing arts. For example, there is St. Luke, the beloved physician, "who was a saint and a physician, and yet died," and the physician in Ecclesiasticus who is memorialized with the ambiguous compliment, "Honor a physician with the honor due unto him."

But it is a fact that the proverbs of all nations excoriate the doctor in no uncertain terms. For instance,

"Many laws and many doctors make a nation ill."

"Physician of others, in ulcers he abounds."

"The doctor takes the fee, and nature does the healing."

—and worse than all, a Philadelphia newspaper the other day reported someone having died "without the aid of a physician."

Jellies of such typical materials as agar-agar or gelatin are composed of a felt of minute fibres pumped out by water, which is held tenaciously in this fine network by capillary attraction. When a jelly dries down, the felt collapses to a film, but this can usually swell up again to the original volume if soaked in cold water. Several years ago, Professor Kistler of the University of Illinois devised a process whereby the water of a jelly could be displaced by a liquid such as alcohol, leaving the jelly mass in its original volume, and then by converting the alcohol carefully to a gas, leave the felt in the uncollapsed condition. This pithlike form which is called "aerogel" can be secured not only with the jellies noted above, but also from the jellified oxides of silicon, iron, nickel, tin, titanium, aluminum and other elements.

Cyclohexylamine is used as a rust preventive in automobile radiators using alcohol antifreeze. Yet alone it is of no great value for the purpose. The same thing is true of soap. But the two in proper admixture strangely enough constitute one of the most effective anti-

rust agents for the purpose indicated and many of the trade-marked anti-freeze solutions are combinations of these two agents with methanol or denatured alcohol.

The imminence of war with its modern madness is evident in the scientific press of Europe where protection against war gases is a matter of common discussion. The use of test papers for identifying these devilish agents of war, even in high dilution, is a subject of considerable interest, for many of them cannot be detected except by such chemical means.

Chlorine is detected by starch iodide paper. Chloropicrin is recognized by the yellow-brown color imparted to paper which has been soaked in dimethylaniline and drained well, but it is doubtful whether there is any chemical test for this gas so sensitive as the human organs of sense. For phosgene, more complex indicators are required:

p-Dimethylaminobenzaldehyde	0.5
Diphenylamine	0.5
Alcohol, 95 per cent.	10.0

In the presence of one part of phosgene in a million parts of air paper impregnated with this solution changes color from white to yellow. Unfortunately, harmless smoke-screens also affect this paper, and for a thoroughly specific test it is necessary to substitute this impregnating solution:

1:3:6-Nitrosodimethylaminophenol	*0.2 per cent. solution in xylene, 5 mils*
1:3-Diethylaminophenol	*0.5 per cent. solution in xylene, 2 mils*

These solutions remain stable for only four days after mixing. Papers impregnated with this compound reagent should be moistened with 50 per cent. alcohol before use, and in the presence of phosgene the color will turn from white to green.

BOOK REVIEWS

Done by persons, unafraid to upbraid, but perfectly willing to give praise where praise is really due.

PHYSICAL CHEMISTRY (First Enlarged Edition). By Filemon Tanchoco, Benipayo Press, Manila, Philippines. Cloth binding, 173 pages including index.

This book was written largely for a very specific purpose, namely, to serve as a text to be used in the Manila College of Pharmacy. Insofar as subject matter is concerned, the title of the book is somewhat inadequate and possibly misleading. One finds a rather general treatment of not only the fundamentals of physical chemistry but there is also interspersed a considerable amount of material which is usually considered under the heading of physics. The absence of all diagrams is quite noticeable. This is explained in the foreword as due to the lack of appropriate symbols by the printers. To compensate for this, the back of each page is left blank so that the student may himself insert in the text the diagrams presented throughout the course.

Although the subject is treated with an almost absolute disregard for the mathematics usually found in such a text, the author is to be complimented on the clarity with which the various phases of the work are presented. In the opinion of this reviewer the book should serve admirably the purpose for which it was intended.

L. F. Tice.

MANUAL OF BIOLOGICAL ASSAYING. By James C. Munch, B. S., M. S., Ph. D., Professor of Pharmalocogy and Bioassays, Temple University, School of Pharmacy. J. B. Lippincott Company, Philadelphia, Pa., 1937. 179 pages. Price: $2.00.

This manual is offered to the student, teacher and bioassayist as a course syllabus and a work manual. It is intended to acquaint the student with methods and procedures and provide the teacher and worker with an outlined plan of the assays, pointing out the reasons for failure or success of the methods employed.

All of the bioassays of the U. S. P. XI are discussed along with many other procedures not so widely used as the official assays.

There is an introduction giving the reasons for bioassays and explaining some of the requirements of the assays with a table of comparisons of U. S. P. X and U. S. P. XI methods.

The specific bioassays are alphabetically arranged. Each monograph gives a brief explanation of the pharmacological action of the drug, a discussion of the potency as described in the standard books, and a detailed plan of procedure and a discussion of the various factors involved in obtaining good or bad results. The reference standard is discussed wherever present. In assays where the calculations and data can be simplified by tabulation of results, blank tables are present and sample report sheets and calculation methods are shown. Photographs, diagrams and graphs are included as an aid in explanations of the site of action and mode of action of the drugs.

Some information regarding the mathematics involved in recording and studying bioassays, a limited list of solutions used, a grouping of official standards and a bibliography of works on assay methods and standards, are also included.

In the opinion of the reviewer the book is an excellent syllabus for the conduction of a course in bioassays, a good source of information regarding technique for the laboratory worker, but by no means a book which can be used alone where detailed study of pharmacological action of biologically assayed drugs is to be carried out in the course of work in the classroom.

M. S. Ulan.

PHARMACAL ARITHMETIC. By Antonio G. Llamas, A. B., Ph. C., Dean, Manila College of Pharmacy, Manila, Philippines. Carmelo & Bavermann, Inc., Manila, 1935. 228 pages and index.

The author has presented in this book the essentials of Pharmaceutical Arithmetic in an interesting and detailed way. Having taught this subject for twenty years, it is interesting to note some of his observations as noted in the "Foreword." He states in part as follows: "It is the author's experience that the students, despite the fact that they received extensive training in mathematics in the high school, find difficulties in solving problems of common ocurrence in pharmacy practice."

Included in the contents are such data as: The Metric System, The English System, Relation of the Different Systems, Thermom-

etry, Density and Specific Gravity, Ratio and Proportion, Percentage, Alligation, Physical Chemistry, Quantitative Analytical Chemistry and an Appendix A, which contains formulas for calculating the area of a circle, the volume of a cylinder, et cetera, and Appendix B, which is concerned entirely with specific volume.

It would seem to the reviewer that specific volume should be considered with Specific Gravity since they are conversely related to each other. The book contains many illustrations of how the various types of problems should be solved, but the author has a tendency to include too many formulas for solving such problems. This may cause some confusion to the student, since it is sometimes difficult for the student to decide which formula to use and it is not conducive to the development of reasoning ability. Taken as a whole the subject is quite adequately treated and it should prove a useful text.

Ralph Calvert.

TSCHIRCH'S HANDBOOK OF PHARMACOGNOSY. Issue No. 19 of the 2d volume; 2d edition, pages 119-224. Printed in German by Tauchnitz, Leipzig.

It is a pleasure to record the publication of another issue of this favorably known handbook, revised by a group of experts, enumerated by name in a previous review.

Described in detail are drugs containing (1) mannite (as manna, common ash); (2) glucoronic acid (as licorice root, polypertium root, Kombucha yeast; (3) disaccharide or saccharose drugs and fruits (as cane sugar, beet sugar, maple sugar, palm sugar, sorghum sugar), various mannas (containing saccharose instead of mannite) and St. John's bread.

The usual excellence in illustrations and in scope of treatment is maintained.

Arno Viehoever.